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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------------------|------------------|
| 10/789,226 | 02/26/2004 | Daisuke Ogawa | FUJA 21.013 | 7964 |
| 26304 7590 04/20/2007 KATTEN MUCHIN ROSENMAN LLP 575 MADISON AVENUE NEW YORK, NY 10022-2585 | | | EXAMINER NGUYEN, LEON VIET Q | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2611 | |
| SHORTENED STATUTORY PERIOD OF RESPONSE | | MAIL DATE | DELIVERY MODE | |
| 3 MONTHS | | 04/20/2007 | PAPER | |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/789,226

Applicant(s)

OGAWA ET AL.

Examiner

Leon-Viet Q. Nguyen

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 November 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 13, 14, 16, 20, 21, 23 and 26-28 is/are rejected.
- 7) ☒ Claim(s) 5-12, 15, 17-19, 22, 24, 25 and 29-31 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 11/12/2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 11/12/2004 was filed after the mailing date of 11/12/2004. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claims 1, 2, and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Higashi et al (US6026115).**

Re claim 1, Higashi discloses a RAKE receiver having a MIXR function, comprising:

a path searcher (path searcher 22 in fig. 6, col. 6 line 54) which detects path timings of a plurality of paths from a received signal (col. 5 lines 15-16);

Art Unit: 2611

a MICT generator (code generator 53, correlator 52, and correlation decision portion 54 in fig. 6, col. 6 lines 55-61) which generates MICT for each of the plurality of path timings detected by the path searcher (col. 6 lines 58-61);

a timing selector (timing controller 51 in fig. 6) which selects path timings and MICTs from among the detected path timings and the generated MICTs in such a manner that the total number of timings becomes equal to a predetermined number (col. 6 lines 59-61);

a despreader (despreader 10 in fig. 6, col. 6 lines 59-61) which despreads the received signal at each of the path timings and the MICTs selected by the timing selector (col. 6 lines 61-63);

a combiner (combiner 14 in fig. 6) which, if an MICT has been selected for a path timing, combines the result of despreading performed at the timing of the MICT with the result of despreading performed at the path timing; and

a RAKE combiner (post-detection combiner 18 in fig. 6) which combines outputs of the combiner by using a RAKE combining technique (col. 6 lines 41-47).

Re claim 2, Higashi discloses a RAKE receiver wherein the path timing selector includes:

first processing means for first selecting one path timing from among the plurality of path timings (col. 6 lines 52-59, the path has been identified after correlation with code sequence generated by a code generator with its timing sliding);

second processing means for determining one of unselected MICTs as a candidate for selection for the selected path timing (col. 6 lines 55-56. The code sequence generated by a code generator with its timing sliding is interpreted to be a MICT. Furthermore, it would be necessary to select an unselected code for each path);

third processing means for selecting one timing from among unselected path timings and the MICT determined as the candidate for selection (col. 6 lines 61-63); and

fourth processing means for causing processing in the second and third processing means to be repeated until the number of selected timings reaches the predetermined number (col. 58-63. Although not explicitly disclosed, it would be inherent to repeat the second and third processes until the timings of the paths are identified and assigned to the code generators).

Re claim 4, Higashi discloses a RAKE receiver wherein the first processing means selects the path timing where the signal power is the largest (fig. 5B, col. 6 lines 29-34 and col. 6 line 64 – col. 7 line 1).

3. Claims 26 and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Ottosson et al (US6683924).

Re claim 26, Ottosson discloses a receiver for receiving a direct code spread signal, comprising: first timing detecting means for detecting path timings of multipaths (col. 11 lines 28-33, desired signal collecting correlation times is interpreted as path timings); second timing detecting means for detecting, based on each of the detected

Art Unit: 2611

timings, a timing for obtaining an interference reducing signal (col. 11 lines 34-39, interference collecting correlation times is interpreted as the timing to reduce interference); timing assigning means for assigning selected ones of the plurality of timings detected by the first and second timing detecting means to a plurality of despreaders (col. 11 lines 40-44, each finger in the RAKE receiver performs despreading); and a combiner for combining outputs of the plurality of despreaders (combiner 520 in fig. 5).

Re claim 28, Ottosson discloses a receiver wherein the timing assigning means includes a changing means for changing any one of the assigned timings (col. 11 lines 40-44, col. 12 lines 38-52) to another timing based on signal quality after the RAKE combining (col. 12 lines 12-23) so as to improve the quality.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Higashi et al (US6026115) as applied to claim 1 above, and further in view of Aldaz et al (WO 02/029996A3).**

Re claim 3, Higashi fails to teach a RAKE receiver wherein the first processing

Art Unit: 2611

means selects the path timing where the value of SNIR (Signal to Noise and Interference Ratio) is the largest. However Aldaz teaches promoting a signal that has a greater SNR than a particular multipath in an assigned state to the assigned state and demoting the lesser SNR multipath to a potential state (pg. 11 line 26 – pg. 12 line 2).

Therefore taking the combined teachings of Higashi and Aldaz as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the method of choosing higher SNR paths of Aldaz into the RAKE receiver of Higashi. The motivation to combine Aldaz and Higashi would be to avoid constant switching of states (pg. 12 lines 7-9).

6. Claim 13, 14, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Higashi et al (US6026115) as applied to claim 1 above, and further in view of Ottosson et al (US6683924).

Re claim 13, Higashi teaches a RAKE receiver wherein the timing selector includes:

fifth processing means for selecting all the path timings (col. 6 lines 59-61, the timings of the paths identified are sequentially assigned to code generators); and

However Higashi fails to teach a sixth processing means for selecting MICTs in a prescribed order after selecting all the path timings, until the total number of selected timings reaches the predetermined number.

However Ottosson teaches a RAKE receiver (col. 11 lines 47-49) wherein the timing selection (col. 11 line 17) includes:

a processing means for selecting correlation timings (col. 11 lines 56-59) in a prescribed order (col. 11 line 66-col. 12 line 10) after selecting all the path timings (col. 3 lines 51-56. Since the correlation times are determined from the times associated with the multipath components, it is interpreted that the correlation timings are selected after the multipath timings), until the total number of selected timings reaches the predetermined number (col. 12 lines 11-17).

Therefore taking the combined teachings of Higashi and Ottosson as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the method of selecting correlation timings of Ottosson into the RAKE receiver of Higashi. The motivation to combine Ottosson and Higashi would be to aid in interference canceling or whitening (col. 3 line 66-col. 4 line 3).

Re claim 14, the modified invention of Higashi teaches a RAKE receiver wherein the sixth processing means selects MICTs in decreasing order of SNIR expected to be achieved by RAKE combining after MIXR combining (col. 11 line 66-col. 12 line 10 in Ottosson, SNR is one of the signal strength measurements).

Re claim 16, the modified invention of Higashi teaches a RAKE receiver wherein the sixth processing means selects MICTs in order of decreasing magnitude of the signal power or SNIR of an interference path (col. 12 lines 24-33).

7. Claim 20, 21, and 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Higashi et al (US6026115) as applied to claim 1 above, and further in view of Nishio et al (US20030108091).

Re claim 20, Higashi fails to teach a RAKE receiver wherein when one of the path timings detected by the path searcher and one of the MICTs generated by the MICT generator overlap each other on a time axis, the timing selector selects the one which gives the larger SNIR. However Nishio teaches wherein when one of the path timings detected by the path searcher (a_k in fig. 4, ¶0034) and one of the MICTs generated by the MICT generator (W_0 - W_2 in fig. 4, ¶0034) overlap each other on a time axis (fig. 4), the timing selector selects the one which gives the larger SNIR (¶0046. Although not explicitly taught, it would have been obvious to one of ordinary skill in the art to select the one yielding the largest SNR to increase the overall SNR).

Therefore taking the combined teachings of Higashi and Nishio as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate selection of the largest SNR of Nishio into the RAKE receiver of Higashi. The motivation to combine Nishio and Higashi would be perform interference cancellation (¶0032) and reduce the calculation amount of interference calculation (¶0047).

Re claim 21, Higashi fails to teach a RAKE receiver wherein when one of the path timings detected by the path searcher (a_k in fig. 4, ¶0034) and one of the MICTs generated by the MICT generator (W_0 - W_2 in fig. 4, ¶0034) overlap each other on a time

Art Unit: 2611

axis (fig. 4), the timing selector selects only the path timing (¶0010 , it would have been obvious to one of ordinary skill in the art to choose the path with the greatest delay time and signal power).

Therefore talking the combined teachings of Higashi and Nishio as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate selection of the largest SNR of Nishio into the RAKE receiver of Higashi. The motivation to combine Nishio and Higashi would be perform interference cancellation (¶0032) and reduce the calculation amount of interference calculation (¶0047).

Re claim 23, Higashi fails to teach a RAKE receiver wherein when two of the MICTs generated by the MICT generator (W_0 - W_2 in fig. 4, ¶0034) overlap each other on a time axis (W_0 - W_2 overlap in fig. 4), the timing selector selects only the MICT that gives the larger SNIR (¶0046 . Although not explicitly taught, it would have been obvious to one of ordinary skill in the art to select the one yielding the largest SNR to increase the overall SNR).

Therefore talking the combined teachings of Higashi and Nishio as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate selection of the largest SNR of Nishio into the RAKE receiver of Higashi. The motivation to combine Nishio and Higashi would be perform interference cancellation (¶0032) and reduce the calculation amount of interference calculation (¶0047).

8. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ottosson et al (US6683924) as applied to claim 26 above, and further in view of Nishio et al (US20030108091).

Re claim 27, Ottosson teaches a receiver wherein the timing assigning means also assigns the selected one of the timings when assigning the timing detected by the second timing detecting means (col. 11 lines 40-44).

However Ottosson fails to teach a receiver wherein the second timing detecting means is a means for detecting a timing located on a time axis at a position symmetric to another timing which is one of the timings detected by the first timing detecting means, the two timings being located symmetrically to each other with respect to a selected one of the timings likewise detected by the first timing means.

Nishio teaches a detected timing ($|\alpha_0|^2$ in fig. 4) which is at a position symmetric to another timing ($|\alpha_1|^2$ in fig. 4) and the two timings being located symmetrically to each other (fig. 4).

Therefore taking the combined teachings of Ottosson and Nishio as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate selection of the largest SNR of Nishio into the RAKE receiver of Ottosson. The motivation to combine Nishio and Ottosson would be perform interference cancellation (§0032) and reduce the calculation amount of interference calculation (§0047).

Allowable Subject Matter

9. Claims 5-12, 15, 17-19, 22, 24-25 and 29-31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

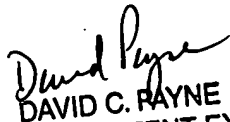
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leon-Viet Q. Nguyen whose telephone number is 571-270-1185. The examiner can normally be reached on monday-friday, alternate friday off, 7:30AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Payne can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Art Unit: 2611

/Leon-Viet Nguyen/


DAVID C. PAYNE
SUPERVISORY PATENT EXAMINER